
Laboratory Directions

It is an almost impossible task for one person to evaluate fairly a laboratory manual in general biology. It is unusual to find two teachers who agree on the content of such a manual, to say nothing of the arrangement and mode of presenting the material.

The manual before us is a loose-leaf assembly divided into three sections: I. Botany, II. Invertebrate Zoology, III. Vertebrate Zoology. The emphasis of the writers is apparently upon morphology. There are two preliminary exercises designed to familiarize the student with the microscope and its use.

Part I. encompasses the Plant Kingdom with twelve exercises covering Thallophyta (8 exercises), Bryophyta (2 exercises), Pterydophyta, and Spermaphyta. The "type-form" is used in the study of each group. Part II. contains fifteen exercises, three of which are devoted to Protozoa, the remainder to Porifera, Coelenterata, mitosis, Platyhelminthes (3 exercises), Nemathelminthes, Annelida, Mollusca, Arthropoda and Echinodermata. Part III. includes eighten exercises, some of which cover as much as eleven pages. The Protochordates are allotted three exercises, the remaining fifteen, one each to Petromyzon, Squalus, Perch, fish scales, caudal fins, Necturus, frog, turtle, lizard, Pigeon, fetal pig, heart kidney, eye, brain and cranial nerves.

Careful dissection by the student and much drawing are essential in using this guide. Such a manual presumably would be suitable for a course in Comparative Anatomy although it is not in accord with the modern conception of a "generalized" course in Biology.—*Paul E. Schaefer.*

Laboratory Manual of General Biology, by John G. Arnold, Jr., and Timothy L. Duggan. Fourth Edition, 275 pages. St. Louis. C. V. Mosby Company, 1940.

BOOK NOTICES

A Short Course in Zoology

What shall be the content of a one-semester course in Zoology? Probably no two teachers would include the same material. Certain type animals and a group of general principles would be common to both but each individual would emphasize certain features which the other had minimized or omitted. These facts make the selection of materials for such a course especially difficult.

Dr. Potter of Texas A. & M. presents his concept of what a one-semester course should include but has so organized his material that other teachers may rearrange the order or omit whole chapters if it is so desired.

The bullfrog and the rat are discussed in some detail as representatives of the vertebrates. Euglena, Amoeba and Paramecium were chosen as types of Protozoa. Hydra, Planaria, Ascaris, Earthworm, Starfish, Freshwater Mussel, Crayfish and Locust typify the invertebrates. Several general chapters such as Protoplasm and the Cell, Metazoan Organization, Chordates in General, Physiology, Endocrine Glands and their Functions, Sexual Reproduction and Development of the Individual, Genetics and Eugenics, and several others greatly broaden the scope of the book.

The importance of ecology is recognized by the inclusion of three specific chapters, Animal Parasitism, The Animal and its Environment, Animal Distribution. These chapters are well done save for the tendency, common to ecologists, to obscure meaning by the use of technical terms unnecessary to the general student.

The closing chapter, "The Theory of Evolution," panorams the topic, but lists a few more extensive references at its close as is the practice with each preceding chapter.

An attempt to pack the utmost into such restricted space makes condensation and generalization essential, which in turn permits inadvertent inaccuracy, exemplified by the discussion of metabolism and growth on page 43. The text is copiously illustrated. Any one interested in a one-semester text will do well to examine this book.—*Paul E. Schaefer.*

Essentials of Zoology, by George Edwin Potter. 526 pages. St. Louis, C. V. Mosby Co., 1940. $3.75.

Plant Microtechnique

This contribution will fulfill the needs of most technicians dealing with plant tissues. Although extensive, it is not encyclopedic and is easily read. Many of the more important microtechnical methods are reviewed and in addition numerous previously unpublished methods are included. Chapters with critical evaluations are found dealing with the more familiar problems of killing and fixation, dehydration, embedding, sectioning and staining. Other chapters present material on whole mounts, glycerine, celloidin, paraffin, cytological, smear, and microchemical methods. The chapter on smear methods is timely, up to date, and much more extensive than is contained in any other text known to the writer. The chapter on celloidin is quite brief. The part on microchemical methods should be of considerable aid to histologists. However, many of the tests are not given with much detail. Some microchemists will not agree that thick sections (up to 50 microns) are more satisfactory to work with than thin sections. A short chapter on sources of materials will be of value to many students.

Over half the volume is devoted to chapters on the various plant phyla. Much valuable information is given on the time and where to collect, culturing, and preservation of specimens.

The book is illustrated with a frontispiece and 110 text figures. Most of these are photomicrographs. The bibliography consists of 256 references. An adequate index is included. In the writer's opinion, this is the best book so far produced on the subject of plant microtechnique.—*Glenn W. Blaydes.*

Plant Microtechnique, by Donald Alexander Johansen. xi+523 pp. New York, McGraw-Hill Book Company, Inc. 1940. $4.50.